



Electro-Textiles:

BDU Keypad Prototype Development Project

WRONZ EuroLabs Softswitch Electronic Fabric

Overview:

Natick Soldier Center, a subordinate activity of the U.S. Army Research, Development and Engineering Command, has a high interest in integrating electronic capabilities and optical components with textile materials and soldier equipment. Future Warrior Systems already being planned have heads up displays, wireless weapons, global positioning, chemical detectors, battery power, physiological status sensors, and combat ID, all linked to the Warrior's personal computer to assist in situational awareness and understanding. In a move to eliminate bulky and heavy gear, such as Land Warrior's soldier control unit, WRONZ EuroLabs in the United Kingdom was contracted to use a soft switch fabric with the required sensitivity to be operational on the sleeve of a Battle Dress Uniform (BDU) and seamless integration into the garment. The keypad is pressure-sensitive, not touch-sensitive, using a thin fabric material. The initial prototype is expected to provide ten keys needed for a few simple commands to prove the concept. Further development should lead to a housing in the BDU to hold the electronics and a fabric-based display.

Description:

General contract requirements were to: Use a Softswitch fabric with the required sensitivity to be operational on the sleeve of a BDU. Design and develop a multi Softswitch array to produce a keypad that can interface with a standard electronic circuit such as a twelve key calculator pad. Incorporate the Softswitch keypad into an appropriate location on the sleeve. Produce a textile data-bus and appropriate connectivity to transport signal from the keypad to the control electronics. Build a housing in the BDU to hold the electronics and LCD screen. Test the operation of the Softswitch interfaces to ensure performance is achieved for demonstration purposes. Demonstrate how Softswitch technology can be incorporated seamlessly into a garment and how it operates as a fabric interface for any type of electronic device. Customers include PEO Soldier, SOCOM, and Future Force Warrior.

Status:

Funding for this effort came from the Army's Manufacturing Technology program. A proof-of-principle demonstration of a textile-based computer input device on the sleeve of the soldier's uniform was developed. Manufacturing techniques to integrate a pressure sensitive textile-based computer input device were established.

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rev 6-6-05
PAO 05-117

